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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,151	09/27/2005	Yusuke Toyoda	14225.15USWO	5255
52835 7590 02/20/2008 HAMRE, SCHUMANN, MUELLER & LARSON, P.C. P.O. BOX 2902 MINNEAPOLIS, MN 55402-0902				
EXAMINER				
SHEVIN, MARK L				
ART UNIT		PAPER NUMBER		
1793				
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02/20/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,151

Applicant(s)

TOYODA ET AL.

Examiner

Mark L. Shevin

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE/IB)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 10/26/2006 and 11/19/2004

DETAILED ACTION

Status

1. Claims 1-4, filed on 19 November 2004 as part of a preliminary amendment, are pending.

Priority

2. Priority claims to Japanese applications 2002-157328 and 2002-157329 are noted in this application and have been accorded benefit.

Information Disclosure Statement

3. The two information disclosure statements, filed 26 October 2006 and 19 November 2004, have been considered.

Claim Interpretation

4. For the product claims 1 and 4, the claim recites composition limitations including Si < 0.5 wt%. For limitations of the "less than" ($X < \#$) or "less than or equal to" ($X \leq \#$) type, the Examiner interprets these to mean that a content of 0 wt% is included, thus the elements specified in the manner above are optional.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Spanjers** (US 2002/0006352 A1).

Spanjers teaches an Al-Mg alloy for die casting operations (see also para 0023 and 0024) comprising 2.7-6.0 wt% Mg, 0.4-1.4 wt% Mn, up to 1 wt% Fe, up to 1.4wt% Si, up to 0.3 wt% Zr, and up to 0.2 wt% Ti (Abstract). Regarding Fe, Spanjers teaches that when higher fracture toughness and/or ductility is desired a suitable maximum for the Fe content is 0.5% (para 0048). Regarding Si, the Si content should be most preferably not more than 0.3 % (para 0049).

Spanjers teaches that his invention also includes die-cast products, particularly high-pressure die-cast products (para 0029). Spanjera produced several test die-cast products including a 200x250x2 mm plate (Example 2, para 0061).

Overall Spanjers teaches Al-Mg alloy products with compositions overlapping the ranges of claims 1 and 4. It is the Examiner's position that Spanjers teaches a high-toughness die-cast product given the substantially overlapping compositions and the high ultimate tensile strengths and elongation percentages show in Table 2 of Spanjers as compared to Table 2 of the instant specification. From MPEP 2144.05, para. 1: In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Regarding claim 1, Spanjers does not teach a specific sum or ratio of titanium to zirconium, however:

It would have been obvious to one of ordinary skill in aluminum casting, at the time the invention was made, taking the disclosure of Spanjers as a whole, to work within the disclosed range of titanium (para 0047) and zirconium (para 0043) to yield an optimal toughness. Put another way, it would have been obvious to one of ordinary skill in the art at the time of the invention to choose the instantly claimed ranges through process optimization, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2145.05 para. II). See *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Malagari* 182 USPQ 549 and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

Regarding claim 2, the pouring temperature does not imply any additional structural limitations in this case as it only specifies the liquid temperature which does not specify the final microstructure. See MPEP 2113: "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior

product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 3, the die-cast sheet 200x250x2 mm of Example 2 is an example of a product that establishes a prima facie case of obviousness between Spanjera and the instant claims as explained above.

Regarding claim 4, Spanjers teaches an Al-Mg alloy that overlaps the composition ranges of claim 1 and furthermore Zr and Ti are present in Spanjers in the new range of 0.1 to 0.3 wt% of claim 4. This alloy was produced in the form of thin plates of 200x250x2 mm. Spanjers does not teach a given ratio of chill layers to minimum thickness but the Examiner holds that these chill layer limitations are not patentable over the prior art of record as one of ordinary skill in the art would certainly be able to optimize the thickness of the product and its chill layers in the normal course of initial die-casting and testing to obtain a maximally ductile and tough product as Spanjers teaches that by optimizing the casting parameters, the tensile and elongation properties can be improved (para 0052) and furthermore that the thinner 2 mm plates had more defects than the 4 mm plates (para 0063), thus implicating the thickness of the plates as a condition for optimization.

6. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Spanjers** (US 2002/0006352 A1) as applied to claim 1 above in view of **Komazaki** (US 2002/0141896).

Assuming arguendo that the pouring temperature does imply additional structural limitations into claim 2, then as Spanjers does not teach the pouring or casting

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temperatures that were used to form the die-cast products of his invention, one must resort to a second reference to aid this deficiency.

Komazaki teaches an Al-Mg-Mn alloy with compositions that overlap those of claim 1 (Abstract) and produces die-cast test pieces at a casting temperature of $720 \pm 10^\circ\text{C}$ (para 0025).

Thus it would have been obvious to one of ordinary skill in aluminum casting, at the time the invention was made, given the whole of Spanjers and Komazaki, to form a die-cast product in the instantly claimed temperature range as Komazaki taught this temperature for an almost identical Al-Mg-Mn alloy.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Bradley (US 2002/0134470)

Dean (US 1,932,843)

Fukuchi (US 2003/0219618)

Kitaoka (US 2002/0088512)

Komatsubara (US 5,181,969)

Ogawa (US 4,121,926)

Raynaud (US 2001/0050118)

Yoshino (US 6,277,217)

-- Claims 1-4 are rejected

-- No claims are allowed

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The rejections above rely on the references for all the teachings expressed in the text of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588. The examiner can normally be reached on Monday - Thursday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark L. Shevin/

/Roy King/

Supervisory Patent Examiner, Art Unit 1742

10-518,151
February 11th, 2008

